REMARKS

As an initial matter the Applicant points out that claims 44, 46-50 and 55 which are indicated as allowable, are amended to remove the previous amendment entered in the Applicant's last response of September 21, 2007. Since these claims were indicated as allowable prior to these previous amendments, and where the previous amendments are unrelated to the reasons for allowance noted in the Official Action, the Applicant believes these noted claims are allowable. If the Examiner disagrees, the Applicant respectfully requests the Examiner to contact the undersigned attorney of record to discuss the same.

Claims 43, 54 and 56 are rejected under 35 U.S.C. § 102(e) as being anticipated by Evans et al. (US 2003/0125850 A1). The Applicant acknowledges and respectfully traverses the raised anticipatory rejection in view of the above new claims and the following remarks.

Evans et al. '850 discloses, as stated in the Applicant's last response, an electric motor which is mechanically coupled to a engine and activated by a surge suppression controller. This controller suppresses oscillation in the driveline within a predetermined range of frequencies centered on an estimate of the natural frequency. The natural frequency estimate is based upon either a mathematical formula or empirical data derived from the physical measurement of components used in the drivetrain of a motor vehicle and more specifically the physical transmission gear ratio. This formula and data are maintained by Evans in a lookup table format in the controller.

Importantly, in Evans et. al. `850 the controller converts a measured rotational speed or torque measurement from at least one conventional speed transducer 42, as noted at paragraph 10, last line, mounted along the engine output shaft 18 of the drivetrain to a frequency (the acceleration component) and compares this frequency to a range in the natural frequency lookup table. An acceleration component that is outside of this predetermined range

in the lookup table is defined as resonance and if determined, the electric motor is energized adding rotational force (or drag) to the drive shaft to cancel or reduce this detected resonance.

Knowing the acceleration component, Evans `850 merely energizes the electric machine 12 in accordance with the inverse of the acceleration component to counter-act the determined resonance. Importantly, neither Evans' electric machine 12 nor the inverse acceleration component in any manner *generates a compensatory vibration* with the same characteristics as the measured disturbing vibrations as is now more clearly recited in Applicant's amended claim 43. To clarify this aspect of the present invention, the Applicant has amended the presently rejected claims, e.g., claim 43, to now include the step of, "generating a compensatory vibration having substantially the same frequency and vibration amplitude as the disturbing vibration and a vibration phase offset relative to the disturbing vibration in one of a starting clutch and gear box in a drive train of the motor vehicle".

Arguably, Evans `850 discerns the natural frequency of the disturbing vibration and a phase offset therefrom as discussed at paragraph 0016, however these signals are merely converted to an acceleration signal and torque command for the electric motor 12;

> . . . the torque command signal TQ_CMD is applied as an input to the space vector control block 66, which represents a conventional motor/generator control function for energizing the windings of electric machine 12 via lice 38 for producing the commanded torque to oppose the detected speed oscillation.

Evans '850 output of the torque command signal to the electric motor 12 is thus merely a motor torque command and does not generate "a compensatory vibration" with the same characteristics as the disturbing vibration as now recited in the claims. Consequently, nor does Evans `850 *apply* any such compensatory vibration to the drive train. In other words, as seen in FIG. 4 graph C of the torque command signal TQ_CMD, the torque of the electric motor 12 is varied with time, however this torque variation is not a compensatory vibration but merely a rotational torque influence on the engine output which dampens the disturbing vibration.

Further, Evans `850 does not disclose the step of "applying the compensatory vibration to at least one rotating component in a motor vehicle drive train" as now also recited in claim 43.

Similarly, claims 54 and 56 now also recite the steps of "generating a compensatory vibration having substantially the same frequency and vibration amplitude as the disturbing vibration and a vibration phase offset relative to the disturbing vibration in the drive train of the motor vehicle" and "applying the compensatory vibration to at least one rotating component in the drivetrain . . .". As these claimed steps are not disclosed, taught or suggested in any manner by Evans `850, the Applicant believes the claims 43, 54 and 56 as amended to be allowable.

Claims 45, 51, 53, 56 and 57 are rejected under 35 U.S.C. § 102(b) as being anticipated by Ranson et al. (GB2,346,351 A). The Applicant acknowledges and respectfully traverses the raised anticipatory rejection in view of the above new claims and the following remarks.

Just like Evans et al. `850, Ranson et al. '351 discloses an electric motor 13 controlled by torque or rotational sensors 29, 30, 33, 34, 35 placed along the drive train of a motor vehicle. The controller receives signals from torque sensors placed at the output shaft of the engine, and from torque sensors placed along the driveshaft and compares changes in rotational speed between these two and other points extending away from the engine to the wheels (Page 4 lines 20-22). The controller sends a signal to energize the electric motor based on this comparison to either work with the motor and provide more torque to the drive shaft, or to work against the motor if there is too much torque.

The rotational speed measurements from each location along the power train are directly compared and the electric motor is energized in the proper direction accordingly. There is no disclosure, teaching or even a suggestion to model the frequency, amplitude or phase of a disturbing vibration, no additional activation points other than increasing or decreasing torque to the driveshaft are described and no compensatory vibrations are induced

to dampen a disturbing vibration. Ranson et al. `351 does not disclose teach or suggest the step of "generating a compensatory vibration having substantially the same frequency and vibration amplitude as the disturbing vibration and a vibration phase offset relative to the disturbing vibration in an abrasion-free permanent brake in a drive train of the motor vehicle" as now recited in claim 45. Ranson et al. `351 merely compares the two torque signals from different points along the drivetrain and energizes the electric motor 13 to add or reduce rotational speed in the drive shaft and so provide a damping effect when a rapid change in torque is detected.

Ranson et al. `351 also discloses a sensor attached to the accelerator pedal and a capability of the controller to send a signal to the fuel supply system to determine driver demand for fuel and clearly not to determine longitudinal acceleration. Arguably, an increase in fuel may be used as a signal to the controller that there will be an increase in torque, but again Ranson et al. `351 does not disclose the step of "generating a compensatory vibration having substantially the same frequency and vibration amplitude as the disturbing vibration and a vibration phase offset relative to the disturbing vibration in an abrasion-free permanent brake in a drive train of the motor vehicle" as currently recited in claim 45. Nor does Ranson et al. `351 disclose that this information is used to graphically model the rotational speed or vibration from this signal or use this information in its comparative graphs for determining the proper direction for activation of the electric motor.

The Applicant's disclosure is unlike Evans et al. '850 and Ranson et al. `351 in that one or more sensors are used to detect in real time rotational speed, vibration, and longitudinal oscillations and to use this information to properly model, generate and apply a compensatory vibration of a specific frequency, amplitude and phase angle that can then be used through control lines to generate a mechanical vibration or be used to continuously or periodically brake a rotational component to dampen a disturbing vibration. The Applicant's real time detection

and analysis and modeling of disturbing vibrations, generating the compensatory vibration through the combined use of multiple sensors for proper vibrational modeling, and the control module applies the compensatory vibration to a rotational component, goes well beyond the mere disclosure of variable torque control of an electric motor as in Evans et al. `850 and Ranson `351, and fundamentally distinguishes the Applicant's disclosure from these references.

As the Examiner is aware, in order to support an anticipation rejection, the cited Evans et al. `850 and Ranson et al. `351 references must disclose each and every feature of the presently claimed invention. Neither Evans `850 nor Ranson `351 disclose the step or feature of "generating a compensatory vibration " as similarly recited in each of the currently rejected claims. This generated vibration is a fundamental distinction from the torque or drag from the electric motors in the applied references. As noted in the Applicants "Background of the Invention" at paragraph 9, this torque or drag, which arguably dampens the oscillations in the drive train causes fuel inefficiencies;

> Although a high-level damping in the components of the power train does reduce the oscillation amplitudes with automatically excited clutch grabbing, this is nonetheless often an unrealistic demand due to the general wish for the lowest possible fuel consumption for a motor vehicle, since a permanently high damping in the power train is basically attainable only through a constantly active elevation of friction losses, for example in the transmission, in the bearings and in the seals.

The support for these steps added to the amended claims is clearly expressed in paragraph 17 of the Applicant's specification:

> To generate a compensatory vibration that will damp the disturbing vibrations in the power train or in the entire motor vehicle, at least in their amplitude, or for a damping braking intervention on rotating components in the power train, this compensatory vibration or the brake intervention has the same or a similar frequency and a vibration phase offset in relation to the vibration that is acting in a disturbing manner. This vibration phase offset leads to a mutual compensation of the vibration amplitudes.

Evans et al. '850 also discloses control lines to the engine, fuel injection system, transmission, and other system components but states (page 1 paragraph [0011])

"The PCM (powertrain control module) carries out a number of *conventional* powertrain control algorithms and, according to this convention, carries out the additional algorithm for energizing the electric motor in response to a detected oscillation component . . . ". In other words, Evanset al. '850 only discloses use of the controller (PCM) to energize the electric motor 12 to add torque to the engine output shaft 18. The interpretation that this statement implies the use of the PCM as an actuating device that can actuate a synchronization device, gear box or any other component within the drive train is not consistent with the capabilities of the surge suppression controller and the electric motor 12 respectively designed to form a torque command and add rotational force to the drive train to reduce any resonance. This energizing of the electric motor 12 in Evans et al. '850 which arguably effects the torque on the drivetrain, does not disclose, teach or suggest either expressly or inherently, the Applicant's claimed steps of "inducing the compensatory vibration in at least one device such that an amplitude of the disturbing vibration is completely eliminated or at least dampened". Meaning that the control induces vibration through a device, for example a clutch, and that vibration is modeled specifically on a measured, real time input.

Claim 52 is rejected, under 35 U.S.C. § 103(a), as being unpatentable over Ranson et al. '351 in view of Schubert et al. '499. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

The Applicant hereby incorporates the same argument from the previous response with regards to the combination of Ranson et al. '351 and Schubert et al '499, and for purposes of brevity does not reiterate the same herein. Even if these references are combinable, and the Applicant adamantly denies that the references provide the necessary teaching or disclosure to provide such a combination, the combination would still fail to disclose, teach or even suggest the steps of the presently pending claims. In particular, Schubert also does not disclose the

claimed features of "generating a compensatory vibration having substantially the same frequency and vibration amplitude as the disturbing vibration and a vibration phase offset relative to the disturbing vibration in the drive train of the motor vehicle" and "applying the compensatory vibration to at least one rotating component in the drivetrain . . ." as recited in claim 52, and as discussed above in regards to Evans `850 and Ranson et al. `351. As these references neither alone, nor in combination disclose, teach or suggest such a step, the Applicant respectfully requests withdrawal of the obviousness rejection as well.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejection(s) should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability of the Evans et al. 850, Ranson et al. `351 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

10/527,874

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,

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